CLAIMS

What is claimed is:

1. A flush toilet for a motor vehicle comprising:

a bowl assembly defining a bowl and a discharge opening at a lower end of the bowl;

a waste ball valve assembly mounted to the flush toilet for selectively opening and closing the discharge opening of the bowl assembly;

a water valve assembly for selectively delivering a source of flush water to the bowl, the water valve assembly including a water valve operable in a water valve open condition and a water valve closed condition; and

a common actuator for controlling both the waste ball valve assembly and the water valve assembly, the actuator movable from a first position to an intermediate position and from the intermediate position to a second position such that in the first position the waste ball valve assembly closes the discharge opening and the water valve assembly is in the closed condition, in the intermediate position the waste ball valve assembly closes the discharge opening and the water valve assembly is in the open position for adding water to the bowl, and in the second position the waste ball valve assembly opens the discharge opening and the water valve assembly is in the open position for flushing the bowl.

2. The flush toilet for a motor vehicle of Claim 1, wherein the waste ball valve is rotatably mounted to the flush toilet.

3. The flush toilet for a motor vehicle of Claim 1, wherein the actuator is interconnected to the waste ball valve assembly and the water valve assembly by a flexible cable.

4. The flush toilet for a motor vehicle of Claim 1, wherein the actuator is a foot actuated lever.

5. The flush toilet for a motor vehicle of Claim 1, wherein the actuator is positioned proximate a front portion of the flush toilet and the water valve assembly is positioned proximate a rear portion of the flush toilet.

6. The flush toilet for a motor vehicle of Claim 1, wherein the actuator is mounted to the flush toilet for rotation about a first axis and the waste ball valve assembly is mounted to the flush toilet for rotation about a second axis, the first axis being substantially perpendicular to the second axis.

7. The flush toilet for a motor vehicle of Claim 1, wherein the flexible cable is attached to a water valve drive arm for driving the water valve assembly between the open and closed conditions.

8. The flush toilet for a motor vehicle of Claim 7, wherein the waste valve assembly is coupled to driven by a waste valve drive arm, the waste valve drive arm being driven by rotation of the water valve drive arm.

9. The flush toilet for a motor vehicle of Claim 8, wherein the water valve drive arm is coupled to the waste valve drive arm through a lost motion connection such that resulting movement of the water valve drive arm from movement of the actuator from the first position to the intermediate position does not result in corresponding motion of the waste valve drive arm.

10. The flush toilet for a motor vehicle of Claim 8, wherein the waste valve drive arm is connected to the water valve drive arm by a link.

11. The flush toilet for a motor vehicle of Claim 9, wherein the waste valve drive arm defines a slot receiving an end of the link such that the link is permitted to translate along the slot during resulting movement of the water valve drive arm from movement of the actuator from the first position to the intermediate position.

12. The flush toilet for a motor vehicle of Claim 1, wherein the water valve assembly is driven through the waste ball valve assembly.

13. The flush toilet for a motor vehicle of Claim 8, wherein the water valve is indirectly driven by the waste ball valve through a gearing arrangement.

14. A flush toilet for a motor vehicle comprising:

a bowl assembly defining a bowl and a discharge opening at a lower end of the bowl;

a waste ball valve assembly mounted to the flush toilet for selectively opening and closing the discharge opening of the bowl assembly;

a water valve assembly for selectively delivering a source of flush water to the bowl, the water valve assembly including a water valve operable in a water valve open condition and a water valve closed condition; and

an actuator for controlling the waste ball valve assembly, the actuator interconnected to the waste ball valve assembly by a flexible cable and movable from a first position to second position for selectively closing the discharge opening.

15. The flush toilet for a motor vehicle of Claim 14, wherein the actuator is a foot actuated lever.

16. The flush toilet for a motor vehicle of Claim 14, wherein the actuator is positioned proximate a front portion of the flush toilet and the water valve assembly is positioned proximate a rear portion of the flush toilet.

17. The flush toilet for a motor vehicle of Claim 14, wherein the actuator is mounted to the flush toilet for rotation about a first axis and the waste ball valve assembly is mounted to the flush toilet for rotation about a second axis, the first axis being substantially perpendicular to the second axis.

18. A flush toilet for a motor vehicle comprising:

a bowl assembly defining a bowl and a discharge opening at a lower end of the bowl;

a waste ball valve assembly mounted to the flush toilet for selectively opening and closing the discharge opening of the bowl assembly;

a rotatable waste ball valve drive arm interconnected to the flush toilet for driving the waste ball valve assembly to selectively open and close the discharge opening;

a water valve assembly for selectively delivering a source of flush water to the bowl, the water valve assembly including a water valve operable in a water valve open condition and a water valve closed condition;

a rotatable water valve drive arm for driving the water valve assembly between the open and closed conditions, the water valve drive arm being connected to the waste valve drive arm through a lost motion connection; and

a common actuator for controlling both the waste ball valve assembly and the water valve assembly, the actuator coupled to one of the waste valve drive arm and the water valve drive arm through a flexible cable and movable from a first position to an intermediate position and from the intermediate position to a second position such that in the first position the waste ball valve assembly closes the discharge opening and the water valve assembly is in the closed condition, in the intermediate position the waste ball valve assembly closes the discharge opening and the water valve assembly is in the open position for adding water to the bowl, and in the second position the waste ball valve assembly opens the discharge opening and the water valve assembly is in the open position for flushing the bowl.

19. The flush toilet for a motor vehicle of Claim 18, wherein the flexible cable is coupled to the water valve drive arm.

20. The flush toilet for a motor vehicle of Claim 18, wherein the waste valve drive arm defines a slot receiving an end of a link such that the link is permitted to translate along the slot during resulting movement of the water valve

drive arm from movement of the actuator from the first position to the intermediate position.

21. A reduced water consumption flush toilet comprising:

a bowl assembly defining a bowl having a discharge outlet at a lower end and a ledge circumferentially extending about a substantial portion of the bowl;

a nozzle mounted to the bowl assembly for pressurizing a source of flush water and delivering the source of flush water to the bowl for rinsing and flushing of the bowl, the nozzle positioned at a rear portion of the bowl and operative to produce a first flow of water in a first circumferential direction about the bowl and a second flow of water in a second circumferential direction about the bowl, the second circumferential direction being opposite to the first circumferential direction;

wherein the ledge cascades the first and second flows of flush water down the bowl as the first and second flows of water move in the first and second circumferential directions, respectively.

22. The reduced water consumption flush toilet of Claim 21, wherein the bowl assembly further includes an open rim, the nozzle positioned below the open rim, the open rim operable to prevent splashing of the flush water from the bowl.

23. The reduced water consumption flush toilet of Claim 21, wherein the first and second flows of water converge at an imaginary line.

24. The reduced water consumption flush toilet of Claim 23, wherein the imaginary line passes through the nozzle and a front portion of the bowl directly opposite the nozzle.

25. The reduced water consumption flush toilet of Claim 21, wherein the first and second flows of water create a symmetrical flow pattern.

26. The reduced water consumption flush toilet of Claim 23, wherein the imaginary line is offset from a reference line passing through the nozzle and a front portion of the bowl directly opposite the nozzle.

27. The reduced water consumption flush toilet of Claim 23, wherein the imaginary line defines a tangent to the bowl located approximately 120 degrees clockwise from the nozzle.

28. The reduced water consumption flush toilet of Claim 21, wherein the first and second flows of water create an asymmetrical flow pattern.

29. The reduced water consumption flush toilet of Claim 21, wherein the nozzle is operative to produce a third flow of water directed substantially downward.

30. The reduced water consumption flush toilet of Claim 28, wherein the first flow of water is substantially greater than the second flow of water.

31. The reduced water consumption flush toilet of Claim 21, wherein at least a portion of the ledge slopes downward from adjacent the nozzle to proximate a front portion of the bowl.

32. The reduced water consumption flush toilet of Claim 21, wherein at least a portion of the ledge increases in width as the ledge extends from adjacent the nozzle to proximate a front portion of the bowl.

33. The reduced water consumption flush toilet of Claim 21, wherein a rear portion of the bowl defines a generally vertical surface.

34. The reduced water consumption flush toilet of Claim 21, wherein the ledge is circumferentially spaced from the nozzle.

35. A flush toilet comprising:

a base;

a bowl assembly defining a bowl, the bowl assembly mounted to the base and defining a discharge opening at a lower end of the bowl;

a waste ball valve assembly mounted to the flush toilet for selectively opening and closing the discharge opening of the bowl assembly; and

a common sealing member for sealing the bowl to the base and for wiping a ball of the ball valve assembly as the waste ball valve assembly is selectively opened and closed.

36. The flush toilet of Claim 35, wherein the common sealing member includes a generally horizontal portion for wiping the ball of the ball valve assembly and a cylindrical portion upwardly extending from the generally horizontal portion for sealing the bowl to the base.

37. The flush toilet of Claim 35, wherein the common sealing member includes a first portion for wiping the ball of the ball valve assembly and a second portion for sealing the bowl to the base.

38. The flush toilet of Claim 37, wherein the first portion is constructed of a relatively incompressible material and the second portion is constructed of a relatively compressible material.

39. The flush toilet of Claim 37, wherein the first portion is laminated to the second portion.

40. The flush toilet of Claim 37, wherein an underside of the first portion is treated to reduce a coefficient of friction.

41. The flush toilet of Claim 40, wherein the underside of the first portion is chlorinated.

42. The flush toilet of Claim 40, wherein the underside of the first portion is coated with a Teflon® layer.

43. The flush toilet of Claim 37, wherein the first portion defines a generally circular opening, the generally circular opening tapering in an upward direction.

44. The flush toilet of Claim 35, further comprising a retaining member for retaining the seal member and positioning the seal member relative to the housing.

45. A flush toilet comprising:

a bowl assembly defining a bowl;

a base downwardly extending from the bowl assembly; and

a shroud removable attached to the toilet, the shroud peripherally surrounding at least a portion of the bowl assembly or at least a portion of the base.

46. The flush toilet of Claim 45, wherein the shroud is constructed of a flexible material, the shroud including first and second ends releasably secured to one another at a rear side of the flush toilet, the flexible material being sufficiently flexible to permit the first and second ends to be separated from one another to facilitate attached to and removal from the toilet.

47. The flush toilet of Claim 46, wherein the shroud surrounds the bowl assembly.

48. The flush toilet of Claim 46, wherein the shroud surrounds the base and a lower portion of the bowl assembly.

49. The flush toilet of Claim 47, wherein the shroud includes a generally horizontal flange disposed between the bowl assembly and the base.

50. The flush toilet of Claim 46, wherein an upper edge of the shroud is received between a downwardly extending flange of the bowl assembly and a sidewall of the bowl assembly.

51. The flush toilet of Claim 45, wherein the shroud is constructed of a flexible material, the flexible material including an antimicrobial agent.

52. The flush toilet of Claim 45, wherein the bowl assembly is constructed of a vitreous china.

53. The flush toilet of Claim 45, wherein the first and second ends are secured to one another with one or more flexible members.

54. The flush toilet of Claim 45, wherein the first and second ends include lower portions rigidly secured to one another and upper portions flexibly secured to one another.